

# ETHIOPIA

## Geographic Base Map

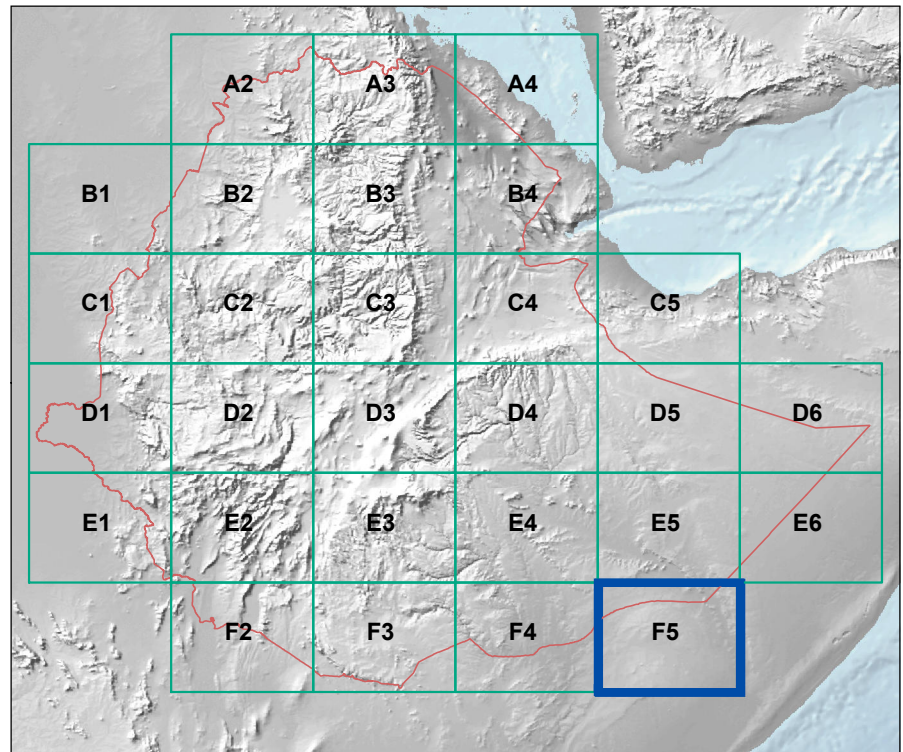
Tile F5 Reference Map Series 1:250,000

Map Sheet # 28 / F5

Somali / SE-Afer

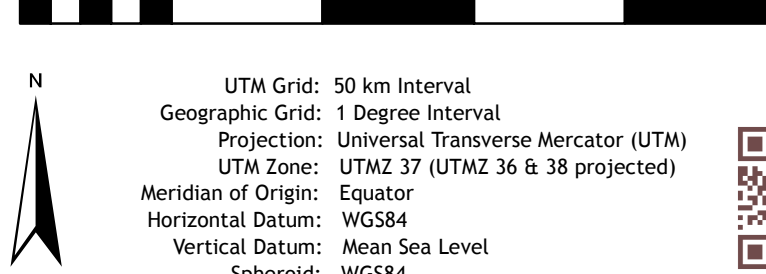
## WLRC Land Cover Map 2016

Map Sheet Index - Scale 1:15,000,000



1:250,000

0 2.5 5 10 15 20 25 km



### Legend

| Administration                | Transport                  |
|-------------------------------|----------------------------|
| National boundary             | Railway                    |
| Village                       | Transnational road         |
| Farmland                      | Primary road               |
| Forest                        | Secondary road             |
| National Park                 | Tertiary road              |
|                               | Track                      |
| Settlement                    | Drainage                   |
| State capital                 | Temporary rivulet (cat. 2) |
| Region capital                | Occasional river (cat. 3)  |
| Large settlement              | Seasonal river (cat. 4)    |
| Medium settlement             | Perennial river (cat. 5)   |
| Small settlement              | Main river (cat. 6)        |
| Not classified                | Stream (cat. 7)            |
|                               | Large stream (cat. 8)      |
| Infrastructure                | WLRC Land Cover Classes    |
| Report                        | Alfalfa                    |
| Burnery                       | Barrenland                 |
| Motor station                 | Cropland                   |
| Gauging station               | Forest                     |
| Health post                   | Grassland                  |
| Dam                           | Settlements                |
|                               | Shrubland                  |
|                               | Water body                 |
|                               | Wetland                    |
|                               | Woodland                   |
| Hydrology                     |                            |
| Marshland                     |                            |
| Well                          |                            |
| Topography                    |                            |
| Mountain peak                 |                            |
| Contour lines (500m interval) |                            |
| Surface Water                 |                            |
| Lake                          |                            |
| Episodic lake                 |                            |

### How to read the "WLRC Land Cover Map 1:250,000"

The main methodological approach implemented to map the complex landscapes of Ethiopia at the required scales for the MapServer series was the majority and minority concept of landscape segmentation that translated into the HCL (hierarchical landscape classification) units. The employment of such an "exclusion-based" approach (e.g. sub-setting of the Landsat imagery and gradually reducing the minority mappings) can be considered as a breakthrough in deriving important land cover information in heterogeneous landscapes, such as the irrigated agricultural area of Ethiopia. Nevertheless, the final land cover was mapped using an approach that combined the automated HCL approach with expert knowledge and visual determination of units. This approach made it possible to distinguish cultivated land from other land use or land cover classes. Unsurprisingly, the actual amount of cultivated land is considerably larger than that indicated by official statistics in use since the mid 1980s when the rural population was half its current size. The team also mapped large-scale land use systems, including of any large direct investments. Results of the study show there has been a considerable expansion and intensification of farming in the past three decades, unfortunately leading to more soil erosion.

References: Tadesse Kassamara, Sefid Eshet, Kasper Huml, Gerd Zedler & Hans Huml (2016): Reducing landscape heterogeneity for improved land use and land cover (LULC) classification across the large and complex Ethiopian highlands, *Geoscientific Information*, DOI: 10.1080/10106049.2016.1222637

### Geospatial Information

National spatial data infrastructure (NSDI) plays a significant role in the development of Ethiopia's fast growing economy, but it contributes just as much to sustainable use of natural resources, infrastructure planning, and efficient management of food crises. Maps are means of visual communication and foster understanding of complex problems. They are containers of data, show spatial patterns, enable geographic analysis, and contribute to the UN's "data revolution" initiative. It is common knowledge that people retain 80% of what they see, 20% of what they read, and 10% of what they hear. Also, maps and visuals are understood a thousand times faster than text, and content with visuals gets 44% more total views on the Internet. This makes maps an ideal means of development and communication in all levels.

### The MapServer Ethiopia project

MapServer Ethiopia is a web-based open-source platform for the dissemination of geospatial data maps and information about Ethiopia. The website contains three main web services that enable: (1) mapping based on pre-produced maps, (2) online mapping of selected information layers, and (3) open geospatial data download. The MapServer Ethiopia data platform and website are intended to improve mappings and spatial understanding in the context of project management, natural resources governance, humanitarian aid work, and academic education.

The MapServer Ethiopia project is part of the activities of the Water and Land Resource Centre (WLRC) to improve data sharing and dissemination in support of land and water resources management. The MapServer Ethiopia is funded by the Swiss Agency for Development and Cooperation (SDC).

### The Water and Land Resources Centre

The Water and Land Resource Centre (WLRC) in Addis Ababa, Ethiopia [www.wlrc.ethiopia](http://www.wlrc.ethiopia) was established by the Centre for Development and Environment, University of Bern, Switzerland [www.cde.unibe.ch](http://www.cde.unibe.ch) in 2011 as an institution associated to Addis Ababa University. Since its inception the centre systematically monitors, collects, integrates, and disseminates data and knowledge in support of sustainable management of natural resources. Today, the centre builds on long-standing achievements to reduce land degradation, improve livelihoods in rural areas and serves as regional knowledge hub and cross-scale dialogue in land governance.

### Origin of map data

Building on EthioGIS-3, the new (2018) release of the National Geospatial Database System for Ethiopia, the MapServer Ethiopia [www.mapserver.ethiopia.org](http://www.mapserver.ethiopia.org) aims at providing a web-based gateway for open and non-authoritative geospatial information for the Federal Democratic Republic of Ethiopia. The mapping services are designed to provide improved decision support for development action, government authorities, NGOs, international organizations, and the civil society. The MapServer Ethiopia is part of WLRC's Water and Land Resource Information System (WLIRS) and adds a portal for environmental and socio-economic data, data sharing facilities and server capabilities for registered user through [www.wlrc.ethiopia.org](http://www.wlrc.ethiopia.org). Besides of WLRC's open geospatial data foundation, the main MapServer Ethiopia product lines are scalable on- and off-line mapping services based on a wealth of free and open geospatial providers.

### Disclaimer

The boundaries, denominations, and any other information shown on this map do not imply any judgement about the legal status of any territory, or constitute any official endorsement or acceptance of any boundaries, on the part of any Government. The joint publishers, the Water and Land Resource Centre, Addis Ababa, Ethiopia and the Centre for Development and Environment, University of Bern, Switzerland, assume no liability for any direct, incidental, or consequential damages whatsoever, and are not responsible for claims by any third party.

### Authors

Jörg Frey, Ulla Gompert, Kasper Huml, Matthias Fries, and Lukas Wersch of CDE Geomatics, University of Bern, Switzerland; Gerd Zedler, Tadeu Kassamara Ngisse, and Johannes Anjae Sany of WLRC, Addis Ababa, Ethiopia.

### Reference

Please note that you must indicate the source of geospatial data or map layers when using this information in other products, as follows: WLRC Ethiopia and CDE, University of Bern, Switzerland, MapServer Ethiopia: Thematic and Geographic Datasets, Field and Base Map Series (map) 1:150,000 1:250,000, Release 3.0/December 2018, Internet: [www.mapserver.ethiopia.org](http://www.mapserver.ethiopia.org). Besides of WLRC's open geospatial data foundation, the main MapServer Ethiopia product lines are scalable on- and off-line mapping services based on a wealth of free and open geospatial providers.

### Contacts

Ethiopia: WLRC, Negnegna, Dargasa Square, P.O. Box 8707, Addis Ababa, Ethiopia; Tel: +251 116 87228 87228, Fax: +251 116 87228 87228; Switzerland: Centre for Development and Environment, University of Bern, Miltelstrasse 43, 3012 Bern, Switzerland, Tel: +41 31 651 8822, [info@cde.unibe.ch](mailto:info@cde.unibe.ch)